

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Smith, et al.

Docket No: TI-25250

Serial No: 09/199,829

Conf. No: 4119

Examiner: Julio Maldonado

Art Unit: 2823

Filed: 11/25/98

For: HYDROGEN PLASMA PHOTORESIST STRIP AND POLYMERIC RESIDUE
CLEANUP PROCESS FOR OXYGEN-SENSITIVE MATERIALS

20/Reply
Brief
I. Walk
2-21-03

REPLY BRIEF

Assistant Commissioner for Patents
Washington, DC 20231

MAILING CERTIFICATE UNDER 37 C.F.R. § 1.8(a)

I hereby certify that the above correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, DC 20231 on 1-24-03.

Ann Trent
Ann Trent

Dear Sir:

This Reply Brief is filed in response to the Examiner's Answer mailed December 3, 2002, in connection with the above-identified application.

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Arguments

Are claims 1, 4-6, and 25-31 properly rejected under 35 U.S.C. 103(a) as being unpatentable over Akram et al. (U.S. Patent No. 5,578,526) in view of Irving et al. (U.S. Patent 3,837,856).

The examiner argues that the Irving patent in col. 3, lines 11-14 clearly states, "...any one of a number of gases can be used such as oxygen, nitrogen, hydrogen and helium..." to argue for the Irving patent being enabling for the use of hydrogen without oxygen. What the examiner fails to quote however is the very next line of the Irving patent which states the "[O]xygen by way of example, has been found to perform quite satisfactorily." The implication of this statement is clear when read in the context of the previous statement quoted by the examiner. Oxygen is the only gas that performs satisfactorily implies that it is the only gas that is enabled by the patent and the inventors have no knowledge of the other gases mentioned in the wish list of gases presented above. In col. 3, lines 26-31, the Irving patent describes a high concentration of oxygen atoms (10% -20%) and an equivalent amount of excited molecular oxygen. In col. 3, lines 41-54 the Irving patent clearly explains the context for the additional gases mentioned above. Here the Irving patent states that the active species in the oxygen are atomic oxygen and molecular oxygen. The Irving patent further explains that the production of a high concentration of atomic oxygen is due in large part to the catalytic effects by the presence of other "foreign" gases, such as hydrogen nitrogen or water vapor. The Irving patent further states that "[T]hese impurities provide many of the kinetic pathways leading to atomic oxygen production. The impurity level of commercially available oxygen is sufficient to give the desired catalytic activity for production of atomic oxygen in the desired quantities." The Irving patent clearly teaches that hydrogen is a "foreign" gas that acts as a catalyst for the production of atomic oxygen. This statement provides a consistent interpretation for the Irving patent. The commercially available oxygen gas at the time contained sufficient quantities of hydrogen and nitrogen to allow these gases to act as catalysts in the production of atomic oxygen. This is consistent with the statement quoted by the examiner that

oxygen, nitrogen, hydrogen, and helium can be used since the commercially available oxygen gas at the time of the invention contained all these gases in non-negligible amounts.

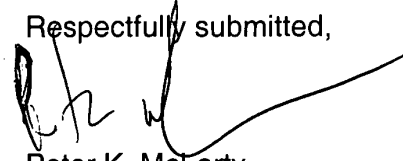
The examiner further argues that the Irving patent in col. 4, lines 8-28 states, "...during the process there may be a temperature of the wafers or substrate within the chamber from room temperature to 100°C to 120°C using hydrogen or oxygen." The lines immediately preceding this statement in the Irving patent provides the proper meaning of the quoted statement. In the lines immediately preceding the quoted statement the Irving patent states that "[T]he process can be carried out within a relatively wide range of temperatures and is normally carried out at the temperature of the plasma plus any additional temperature rise occurring due to the temperatures of the plasma varies in accordance with the gas used. For oxygen it is approximately 80°C and for nitrogen it is in excess of 200°C. During the process, there may be a temperature rise of the wafers or substrates within the chamber from room temperature to 100°C 120°C using hydrogen or oxygen." The Irving patent teaches that commercially available oxygen gas contains non-negligible amounts of nitrogen, hydrogen, and water vapor. In the plasma each gas will contribute differing properties to the plasma. The above statement simply states the relevant temperatures for all the gases present in the plasma, both as a plasma temperature and as a wafer temperature rise due to the plasma. The above statement does not imply as the examiner tries to argue that the Irving patent teaches the use of hydrogen without oxygen as required by the instant invention.

The statement mentioning the use of gases other than oxygen is not related to the other statements quoted by the examiner. Taken alone this statement does not teach or enable the use of hydrogen and does not support the examiners rejection.

In light of the above, it is respectfully submitted that the present application is in condition for allowance, and notice to that effect is respectfully requested.

To the extent necessary, the Applicants petition for an Extension of Time under 37 CFR 1.136. Please charge any fees in connection with the filing of this paper, including extension of time fees, to the deposit account of Texas Instruments Incorporated, Account No. 20-0668.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Peter K. McLarty', with a long horizontal flourish extending to the right.

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